

Learning Progressions and Formative Assessment



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MontCAS Presents

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Formative Assessment Modules

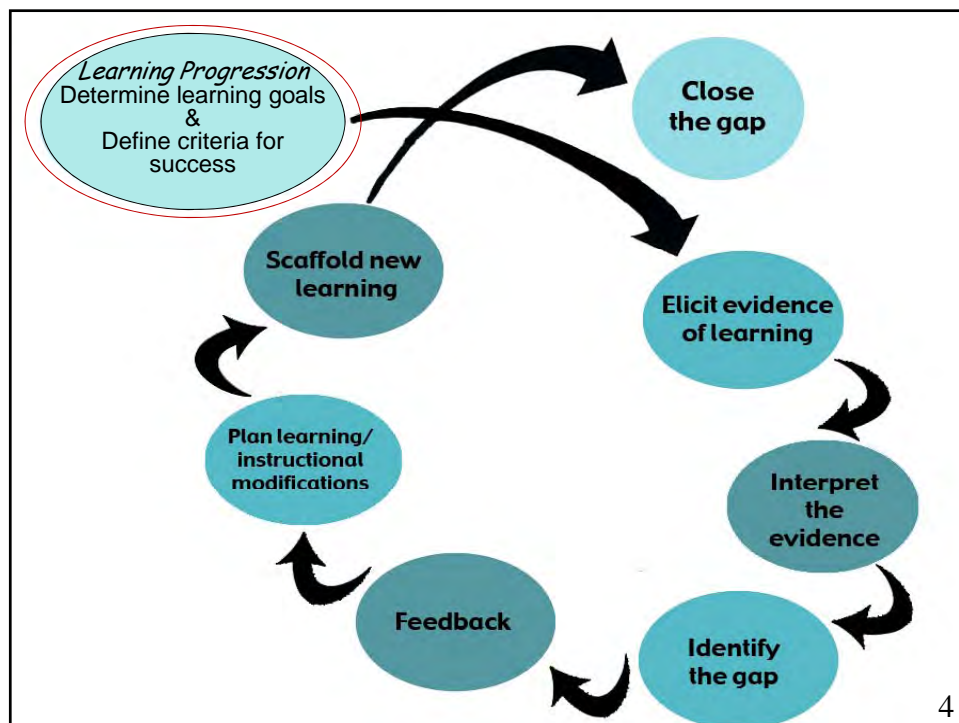
- Module 1: Overview of Formative Assessment
- Module 2: Assessment Systems
- **Module 3: Learning Progressions and Learning Goals**
- Module 4: Planning Formative Assessment
- Module 5: Differentiating Instruction
- Module 6: Feedback
- Module 7: Student involvement
- Module 8: Changes in Practice

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Module Objectives

- ✓ *Gain an understanding of how learning progressions support instruction and formative assessment*
- ✓ *Learn about different perspectives on how learning progressions can be constructed*
- ✓ *Learn how to determine learning goals and success criteria*

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Overview

- ✓ *What Formative Assessment Is and What It Isn't*
- ✓ *Learning Progressions and Formative Assessment*
- ✓ *Learning Goals and Success Criteria*
- ✓ *Examples from Teachers*
- ✓ *Communicating Goals to Students*
- ✓ *Summing Up*

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What Formative Assessment Is and What it Isn't

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What It Is

Formative assessment is a planned process in which assessment-elicited evidence of students' status is used by teachers to adjust their ongoing instructional procedures or by students to adjust their current learning-tactics.

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What It Isn't

- It is not a test
- It is not an interim test (also referred to as a benchmark or periodic test) administered every few months by schools or districts
- It is not the unplanned, serendipitous use of student cues to adjust teaching

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What Is a Learning Progression?

- A sequenced set of building blocks (subskills and/or bodies of enabling knowledge) it is thought students must master en route to mastering a more remote, target curricular aim

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VERBAL PRECISION: At any learning-progression party, it is a blooming requisite.

- *Target Curricular Aim*: An outcome to be sought of students, frequently after an instructional sequence of some duration
- *Subskill*: When the target curricular aim is a significant cognitive skill, this would be a lesser cognitive skill that contributes to students' mastery of the target curricular aim
- *Enabling Knowledge*: A body of facts, principles, information, etc. that is needed for students to master a target curricular aim

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Three Learning-Progression Incarnations

Learning
Progressions

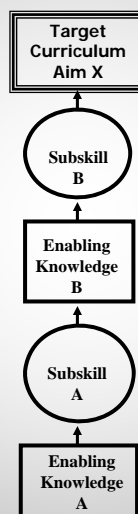
Learning
Progressions

**LEARNING
PROGRESSIONS**

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An Illustrative Learning Progression

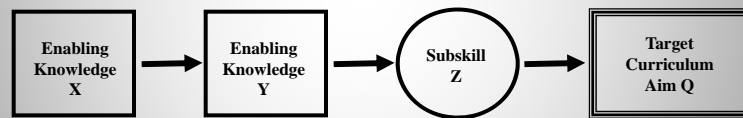
**An Illustrative
Learning
Progression**



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A Horizontally Represented Learning Progression

A Horizontally Represented Learning Progression



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Why Are Learning Progressions So Necessary for Formative Assessment?

- ✓ A sequence of instructional activities based on a carefully conceived learning progressions is more apt to be successful than a less thoughtfully conceptualized instructional sequence
- ✓ A learning progression's building blocks provide a coherent framework for a collection of assessment evidence during the formative-assessment process

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Building Learning Progressions: Two Preliminary Considerations

- How many building blocks should a learning progression contain?
- What is the optimal grain-size for a learning progression's building blocks?

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Building Learning Progressions: A Four-Step Procedure

1. Understand target curricular aim deeply
2. Identify precursive subskills and enabling knowledge for the target curricular aim
3. Determine measurability of each potential building block
4. Sequence building blocks for instruction

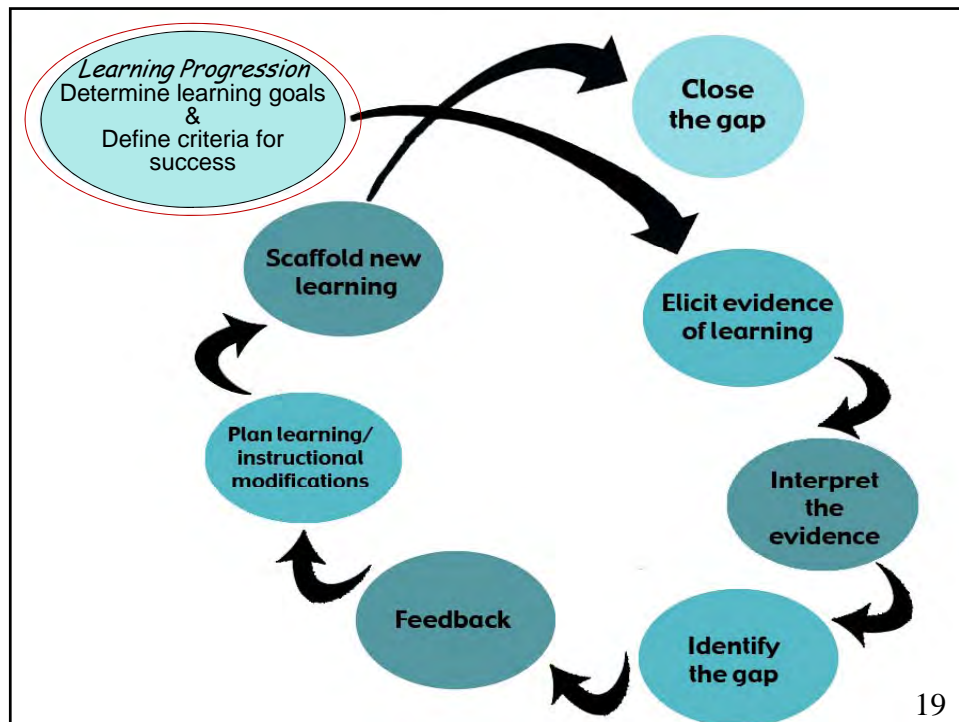
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Questions/Comments?

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**Learning Goals and Success
Criteria**

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What Jim Said...

....Formative assessment is a planned process

Effective Formative Assessment

(Sadler, 1989, p.121)

- possess a concept of the *standard* (or goal, or reference level) being aimed for
- compare the *actual* (or current) *level of performance* with the standard
- engage in appropriate *action* which leads to some closure of the gap

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Learning Goal and Success Criteria

Teachers and students need to:

1. be clear about the learning goal – what is to be learned
2. have a clear conception of what it means to meet the learning goal – the criteria for success

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Examples from Teachers (Not Counsels of Perfection)

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Communicating Goals to Students



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Big Idea: Identify and plot points in all four quadrants

Learning Goal	Success Criteria
Understand the structure of a coordinate grid.	I can talk and write about plotting points on a coordinate grid using correct vocabulary.
Relate the procedure of plotting points to the structure of a coordinate grid.	I can plot and label points in each quadrant on a coordinate grid.
	I can create a rule about coordinates for each quadrant.

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Big Idea: Use data to draw conclusions

Learning Goal	Success Criteria
Understand the relationships between variables that affect standing waves in strings.	Be able to measure cyclical motion using frequency.
	Differentiate between resonating and vibrating in strings.
	Design tests for variables that affect fundamental frequency of strings and draw conclusions.

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Big Idea: Colors have value and intensity

Learning Goal	Success Criteria
Understand how colors are affected by adding black and white to create shades and tints.	Create different tints and shades of the same color and explain why the color changes.
Understand how artists use tints and shades to create various effects in their work.	Explain how artists have created effects using tints and shades in artwork.
Use accurate vocabulary.	When you are explaining why color changes of how an artist used tints and shades, include accurate vocabulary in your explanation.

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Big Ideas: Adaptations in physical structure or behavior may improve an organism's chance for survival (Science)
 Respond to sensory information through the language and skills unique to the Visual Arts

Learning Goal(s)	Success Criteria
Use what we have learned about line in your observational drawings of cacti.	I can make detailed observation of cacti. I can use lines of different thickness and direction to show the features of the cacti.
Use vocabulary from the visual arts and science and use in sentence structures to describe your observations of the features of the desert plants.	I can describe what I observe in complete sentences. I can use the science vocabulary and art vocabulary to talk about my drawing.
Understand the features of desert plants and how they are adapted to their environment.	I can make some hypotheses about why cacti can live in the desert.

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Title: Shoelaces	
Grade 8 or 9 (2 class periods)	
Essential Concept(s)	<ol style="list-style-type: none"> 1. Statistics and Probability: Analyze and summarize data sets, including initial analysis of variability. 2. Algebra: Use linear functions, and understanding of the slope of a line and constant rate of change, to analyze situations and solve problems.
Sub-Concept (s)	<ul style="list-style-type: none"> • Informally determine a line of best fit for a scatterplot to make predictions and estimates. • Use linear functions, and understanding of the slope of a line and constant rate of change to analyze situations and solve problems.
Prerequisite Knowledge	<ul style="list-style-type: none"> • Coordinate Graphing • Slope • Linear Equations
Learning Goal	Understand that: <ul style="list-style-type: none"> • Data can be represented with a linear model. • The linear model gives the power of prediction. • The linear model has limitations.
Success Criteria	I can: <ol style="list-style-type: none"> 1. Organize data and identify patterns in the data. 2. Explain where to draw a line that would be a representation of the relationship and explain why it is a good representation. 3. Explain the limitations of a linear model. 4. Write an equation to represent the line and explain how the parts of the equation were found. 5. Use the line to predict relationships beyond the data provided. 6. Explain how a mathematical model can be used to make predictions.
Focus Question	How can a mathematical model help describe the relationship between the eyelets on a pair of shoes and the length of the laces?

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Revising Learning Goals and Success Criteria

Learning Goal	Success Criteria
To understand the concept of slope	I will describe in writing and using pictures what I believe slope is using new vocabulary
To understand that there are different types of slopes and these slopes look different on a graph and in an equation	I will decide and justify what type of slope I am making for each graph

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"I hesitated to list slope as a rate in the learning goal because I want students to come to that understanding through investigation instead of my telling the students that I want you to understand slope as a rate and then I have given them what slope is before they have investigated it."

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"I have struggled with the 'discovery' piece in the past, too. I wonder if using words like 'relate' or 'connect' in your learning goal with regard to slope and rate would help? That way students are aware they are looking for a relationship from the onset of the lesson, but they still need to discover the nature of that relationship through inquiry."

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"Sharon, you are a Learning Goal writing QUEEN! I went ahead today and focused students on what the connection is between slope and rate. The lesson felt much more focused and students were still working on the exploration. Also, as I went around and asked students what they thought the connection was between slope and rate, they were telling me what was happening in terms of time and distance (like we were covering more distance in less time....the faster we went the steeper the slope). Really excellent explanations! Collaboration is key to this whole process."

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Mary Alice White (1971)



- "... a child only know he is going to school. Very quickly, the daily life onboard ship becomes all important. The daily chores, the demands the inspections, become the reality, not the voyage, nor the destination"

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Communicating Goals to Students

- Students who are focused on learning goals develop a greater sense of intrinsic motivation (Ames, 1992; Ames & Archer, 1988).
- Goals that incorporate specific performance standards are more likely to enhance self-regulation and activate self-evaluations than are such general goals as "do my best" or "try hard" (Locke & Latham, 1990).
- Proximal, short-term goals result in higher motivation and better self-regulation than more distant, long-term goals. (Bandura, 1997; Boekaerts, Pintrich and Zeidner, 2000; Locke & Latham, 1990).
- Specific learning goals focus students' attention, and feedback can be directed to them. The goals and associated feedback include information about the criteria for success in attaining them (Hattie & Timperley, 2007).

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Dweck, 1999

Two Views of Intelligence:

- Entity View
- Incremental View

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Making Criteria Understandable

- Language appropriate to the students' level
- Provide exemplars of what the success criteria look like in practice
- Integrate into lesson

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Summing Up

Summing Up

- ❖ Learning progressions describe a pathway of learning for students and teachers
- ❖ Explicit learning progressions can assist teachers to plan instruction and formative assessment
- ❖ Learning goals and success criteria drive the process of formative assessment
- ❖ Success criteria are checks on learning that students can use as they monitor their own learning
- ❖ Learning goals and success criteria need to be communicated to students in language they can understand.

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Questions/Comments?

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